

RELATIONSHIP BETWEEN SOCIO-PERSONAL AND ECONOMIC CHARACTERISTICS AND POLLUTION AWARENESS

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ABSTRACT

The present study was conducted in Sangli district of Maharashtra state in year 2023-24. Sangli district was one of the agriculturally important district of the state, which was located as part of Western Maharashtra. Net sown area in Sangli district is around 6.73 lakh hectare, which represents the area under cultivation in the district. The present study was confined to "Expost-facto design" as the independent variables were already operated in the study area. Three talukas of Sangli district i.e. Palus, Kadegaon and Miraj were considered for study. In all 150 farmers were selected. The present investigation seeks to study the farmers' awareness regarding agricultural pollution. Total twelve independent variables representing personal, social and economic characteristics were presumed to study the influence of pollution awareness. The variables under study were selected on the basis of extensive review of literature related to the topic of research and consultation with experts. The important statistical tools used in the study have been described as frequency distribution of the respondents, average score, standard deviation, Karl Person's coefficient of correlation (r), etc. Majority of the respondents were from middle age, had primary to secondary level of education and had big and joint type of family. Majority of the respondents had membership in one organization, medium extension as well as mass media contact. More than half of the respondents were with primary and secondary level of education. This may be due to the availability of primary and secondary level of education at village level. Majority of the respondents had joint family. The probable reason might be prevailing joint type of family social system in this region. Majority of the respondents had low sources of agricultural information and were not subscribe of agricultural magazine. The most popular services oriented village organization was co-operative societies. In order to avail its benefit such as credit, subsidy etc. they preferred to be members of service co-operative society. Majority of the respondents were big farmers, had medium to low income and farming with animal husbandry as their main occupation. They preferred to be members of service co-operative society. Majority of the respondents were big farmers, had medium to low income and farming with animal husbandry as their main occupation. Out of 12 independent variables only 6 variables like education, size of family, extension contact, mass media contact, information sources and subscriber of agricultural magazines were positively and significantly correlated with awareness regarding agricultural pollution. While other 6 variables like age, type of family, social participation, annual family income, occupation and land holding were non-significantly correlated.

(Key words: Socio-personal and economic, awareness, pollution, pollution awareness)

INTRODUCTION

The air, water and food commodities are loaded with toxic chemicals. In India after green revaluation use of agricultural chemicals got momentum and rose by many folds. It is the period when agriculture in India improved due to the adoption of novel methods and technology in agriculture. As these were used more unscientifically, they started showing negative impact on soil, water and as whole

on environment, which otherwise could be termed as pollution. It is, therefore essential to create awareness among cultivators about the changes in the quality of our environment.

The present study was conducted in Sangli district of Maharashtra state in year 2023-24. Sangli district was one of the agriculturally important district of the state, which was located as part of Western Maharashtra. The exploratory research design of social research was used for the present investigation. The present study was undertaken

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in agriculture extension blocks of Sangli district of Western region of Maharashtra.

Total twelve independent variables representing personal, social and economic characteristics were presumed to study the influence of pollution awareness. The variables under study were selected on the basis of extensive review of literature related to the topic of research and consultation with experts. The important statistical tools used in the study have been described as frequency distribution of the respondents, average score, standard deviation, Karl Person's coefficient of correlation (r), etc. Singh *et al.* (2011) explained that the communication media like newspapers, magazines, bulletin and posters are very little use to them. The most popular services oriented village organization was co-operative societies. In order to avail its benefit such as credit, subsidy etc. they preferred to be members of service co-operative society. Total twelve independent variables representing personal, social and economic characteristics were presumed to study the influence of pollution awareness. The present investigation was undertaken to study the farmers' awareness regarding agricultural pollution.

MATERIALS AND METHODS

Maharashtra state has 36 districts out of which Sangli district was selected for this study. These 36 districts are further divided into 109 sub-divisions of districts and 357 talukas. Sangli district was one of the agriculturally important district of the state, which was located as part of Western Maharashtra. It has the net sown area in Sangli district is around 6.73 lakh hectares, which represents the area under cultivation in the district; with major crops including Jowar, Bajara, Suhgarcane, Groundnut and Soybean, while also being known for horticultural crops like Grapes and Pomegranate. It has total 735 villages with 28,20,575 population having 82.62 per cent literacy. The predominant soil type in Sangli district, Maharashtra is Black Cotton Soil (also known as clayey black soil).

The present study was confined to "Expost-facto design" as the independent variables are already operated in the study area. Three talukas of Sangli district i.e. Palus, Kadegaon and Miraj were considered for study. From each selected taluka, five villages were selected randomly, which has maximum use of fertilizers, pesticides, irrigation, etc. further from each selected villages ten respondents were randomly selected. In all 150 farmers were selected. The data were collected through the personal interview schedule, which is considered to be the most important tool for the researcher to get authentic first-hand information.

The interview schedule was divided into two parts. The first part deals with the socio-personal and economic characteristics of the respondents. The second part includes the awareness of farmers about agricultural pollution. Frequency and per cent of independent variables were also calculated (Table 1).

Variables and their measurement

The variables under study were selected on the basis of extensive review of literature related to the topic of research and consultation with experts. The important statistical tools used in the study have been described as frequency distribution of the respondents, average score, standard deviation, Karl Person's coefficient of correlation(r), etc. Only those variables, which were found most relevant to the present investigation, were finally selected for the study.

Table 1. Variables and their measurement

Sr. No.	Variables	Measurement
Independent variable		
1	Age	Chronological age
2	Education	Schedule develop
3	Type of family	Schedule develop
4	Size of family	Schedule develop
5	Social participation	Scoring as per SES scale by Pareek and Trivedi (1963)
6	Extension contact	Schedule develop
7	Mass media contact	Schedule develop
8	Source of agricultural information	Schedule develop
9	Subscriber of agricultural magazine	Schedule develop
10	Annual family income	Schedule develop
11	Occupation	Schedule develop
12	Land holding	Hectares of land owned
Dependent variables		
13	Awareness	Scoring as per awareness test developed by Dhillon (2001) with due modification

For the measurement of independent and dependent variables, appropriate scales developed and adopted by other research workers were used with due modifications. The statistical tools use for the analysis of the data were percentage, mean, standard deviation and correlation coefficient.

Pearson's correlation coefficient (r) was used to find out zero order correlation between dependent and independent variables to see the nature of relationship existed.

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{[N\sum X^2 - (\sum X)^2][N\sum Y^2 - (\sum Y)^2]}}$$

Where,

N = Number of respondents

$\sum XY$ = Sum of products of dependent and independent variables

ΣX	= Sum of independent variables
ΣX^2	= Sum of square of independent variables
ΣY	= Sum of dependent variable
ΣY^2	= Sum of square of dependent variable
$(\Sigma X)^2$	= Square of sum of independent variables
$(\Sigma Y)^2$	= Square of sum of dependent variable
r	= Correlation coefficient

RESULTS AND DISCUSSION

The results and discussion of the present study have been summarized on the basis of response of respondents regarding to socio-personal and socio-economic attributes among the respondents are represented in the following

Socio-personal Attributes

Age

The data in the Table 2 revealed that majority of the respondents (56.00 per cent) had middle age i.e. 31 to 50 years followed by 27.00 per cent had old age (above 50 years) and 8.00 per cent respondents were in the young age group (up to 30 years). It can be inferred that highest numbers of respondents were in the age group of 31 to 50 years.

Agarkar *et al.* (2023) reported that the age category of rural dairy farmers revealed that the 38 per cent of the rural dairy farmers belonged to age category up to 35 years followed by 42 per cent of rural dairy farmers belonged to age category middle age category i.e., between 36 to 50 years.

The present findings are in line with the finding of Alexso Ngadong *et al.* (2024), who reported that majority (57.72%) of the respondents belonging to category of middle age group of 38-60 years

Education

It is obvious from the data presented in Table 3 that majority of the respondents (92.67 per cent) were literate. Among them 53.34 per cent of the respondents had primary and secondary level of education followed by 23.33 per cent of the respondents were graduate and above. Only 7.33 per cent were illiterate. It can be concluded from the above fact that more than half of the respondents were with primary and secondary level of education. The present findings are in line with Agarkar *et al.* (2023), they noticed that only 2 per cent of the rural dairy farmers were found to be illiterate.

Type of family

It is evident from the data presented in Table 4 that more than half (57.00 per cent) of the respondents were from joint family and less than half (43 per cent) of the respondents were from nuclear type of family background. It may be concluded from the above data that majority of the respondents had joint family.

Size of family

A look into Table 5 pointed out that majority (61.33 per cent) of the respondents were found with big size of the family having more than four members in the family and 38.66 per cent of them were with small family having up to four members in the family. It can be concluded that two third of the respondents were having large size of family.

The probable reason might be primary to secondary level of education and unawareness of family planning. The present findings are in line with Netake *et al.* (2024), who reported that majority (73.33%) of the farmers had medium size family,

Social participation

It can be seen from the Table 6 that more than half (56.00 per cent) of the respondents had membership in one organization whereas 28.00 per cent of the respondents had membership in more than one organizations and 4.00 per cent respondents had no membership in any village institutions. The respondents who were holding position in any organization were only 12.00 per cent.

From the above discussion it can be inferred that majority of the respondents were having membership in one or more than one organization.

Extension contact

The data presented in the Table 7 portrays that more than half (51.33 per cent) of the respondents were having medium extension contact followed by low (28.00 per cent) and high (20.66 per cent) extension contact. Government of Maharashtra as well as NGOs posted their extension worker at village level. They have to frequently visit villages as per their schedule tour programme, which might be the probable reason for this type of findings.

The present findings are in line with Netake *et al.* (2024), who reported that majority (66.67%) of farmers had medium level of extension contact.

The present findings are in line with Deshmukh *et al.* (2024), which indicated that majority (55.00%) of the respondents were having medium level of extension contact, followed by low (22.50%) and high (22.50%) extension contact respectively.

Mass media contact

It is apparent from the data presented in the Table 8 that majority (68.66 per cent) of the respondents had medium level of mass media contact while 17.33 per cent respondents had low as well as high level of mass media contact. Rest of 21(14 per cent) respondents had high level of mass media contact.

Sources of agricultural information

A look in to Table 9 pointed out that less than half (48.00 per cent) of the respondents had low sources of agricultural information followed by 35.33 per cent and 16.66 per cent respondents had medium and high sources of agricultural information, respectively.

The results thus established the fact that less than half of the respondents had low sources of agricultural information. This might be due to medium to low mass media exposure and primary to secondary level of education of the respondents and not subscriber of agricultural magazine.

Subscriber of agricultural magazines

Table 10 shows that less than three fifth (62.00 per cent) of the respondents were not subscriber of agricultural magazine whereas 38.00 per cent were subscriber of one or more agricultural magazines. On the basis of the above results it can be concluded that more than half of the respondents were not subscriber of agricultural magazine.

Annual family income

A perusal of data in Table 11 highlighted that two fifth (46.66 per cent) of the respondents were found in medium income group i.e. income ranging from Rs.50,001 to Rs.1,00,000 whereas 28.00 per cent of them were in low and 25.33 per cent were in high family income group means their income up to Rs.50,000 and above Rs.1,00,000, respectively.

The present findings are in line with Agarkar *et al.* (2023). They noticed that 53.50% of dairy farmers had medium level of annual income (Rs.2,00,000 to Rs.3,00,000/-) followed by 29 % of dairy farmers who had low level of annual income (Up to Rs2,00,000-) while only 17.50% of dairy farmers had high level of annual income (above Rs.3,00,000/-).

Occupation

A perusal of data in Table 12 highlighted that more than half (50.66 per cent) of the respondents had farming with animal husbandry as main occupation followed by 29.33 per cent had only farming as their occupation and 20.00 per cent of the respondents had farming with other business as their main occupation.

The present findings are in line with Agarkar *et al.* (2023). They observed that 83% of dairy farmers engaged in agriculture and dairy occupation, 11% dairy and services occupation and 6% engaged in agriculture and dairy with other occupation.

Land holding

The data presented in Table 13 make it clear that more than half (53.33 per cent) of the respondents had large size of land holding i.e. above 4.0 ha, whereas 27.33 per cent with medium size of land holding i.e. 2.01 to 4.0 ha and 14.00 per cent with small size of land holding i.e. 1.01 to 2.0 ha. Only 5.33 per cent of the respondents were marginal farmers (i.e. land up to 1.0 ha).

Relationship between socio-personal and economic characteristics and pollution awareness

Age and awareness

The data from Table 14 revealed that the age of the respondent had negative but non-significant relationship ($r = -0.0762$) with awareness regarding agricultural pollution. The negative and non-significant relation between age and awareness indicates that age did not play any role in awareness regarding agricultural pollution.

Education and awareness

Data presented in the Table 14 indicated that level of education of the respondents was positively and significantly ($r = 0.2842^*$) related with the awareness regarding agricultural pollution indicates that education is a variable, which influenced the awareness of agricultural pollution.

This finding is in line with the findings of Abdul Aziz, Sattari *et al.* (2021), who reported that personality traits like education ($r = 0.581$) exhibited positive and significant correlation at 0.05 level of probability with effectiveness of farmers fair.

Type of family and awareness

The data presented in the Table 14 revealed that there was a negative but non-significant ($r = -0.0133$) relationship between type of family and awareness regarding agricultural pollution. The negative non-significant association reflects that type of family did not play any role with awareness regarding agricultural pollution.

Size of family and awareness

The data in the Table 14 highlighted that there was a positive and significant ($r = 0.2620^*$) relationship between size of family and awareness of agricultural pollution.

This indicates that as size of family increases the awareness regarding agricultural pollution also increases. The study thus established the fact that size of family had influenced on awareness of farmers regarding agricultural pollution.

Social participation and awareness

The results presented in Table 14 clearly indicated that there was positive but non-significant ($r = 0.0132$) relationship between social participation and agricultural pollution awareness. The result reflects that social participation did not play any role in agricultural pollution awareness.

Extension contact and awareness

It can be seen from the Table 14 that extension contact had positive and significant relationship ($r = 0.1324^*$) with awareness regarding agricultural pollution. The study thus established the fact that extension contact influenced the awareness regarding agricultural pollution. The probable reason may be that majority of the respondents had medium extension contact with extension functionaries and they make aware the respondents regarding agricultural pollution.

This finding is in line with the findings of Abdul Aziz, Sattari *et al.* (2021), who reported that personality traits like extension contact ($r = 0.647$) exhibited positive and significant correlation at 0.05 level of probability with effectiveness of farmers' fair.

Mass media contact and awareness

Data presented in the Table 14 showed that mass media and awareness regarding agricultural pollution had positive and significant ($r = 0.4379^*$) relationship, which

reflects that mass media play an important role for increasing the awareness of the respondents regarding agricultural pollution. The probable reason might be that the respondents in the study area had medium to high extension contact.

This finding is in line with the findings of Abdul Aziz, Sattari *et al.* (2021), who reported that personality traits like mass media exposure ($r=0.406$) exhibited positive and significant correlation at 0.05 level of probability with effectiveness of farmers fair.

8. Sources of information and awareness

Data presented in the Table 14 indicated the association between information sources and awareness regarding agricultural pollution was positive and significant ($r=0.4122^*$). This indicated that information sources were an important variable, which increased awareness regarding agricultural pollution. The study thus established the fact that information sources influenced the awareness of respondents regarding agricultural pollution.

It was observed that in the study area the respondents had medium to high sources of agricultural information might be the probable reason for this type of findings.

9. Subscriber of agricultural magazines and awareness

The data presented in the Table 14 indicated that there was positive and significant ($r=0.3612^*$) relationship between subscribers of agricultural magazine and awareness regarding agricultural pollution, which indicates that as the number of subscribers increases, the rate of awareness regarding agricultural pollution also increased.

The study thus established the fact that subscriber of agricultural magazine had influenced on awareness of agricultural pollution.

10. Annual family income and awareness

The data presented in Table 14 revealed that there was positive but non-significant ($r=0.0418$) relationship between income and awareness regarding agricultural pollution.

Majority of the respondents were medium to big farmers and belong to medium to high income group but they had primary to secondary level of education only, which might be the probable explanation for this type of results.

This finding is in line with the findings of Deshmukh *et al.* (2024), who reported that annual income ($r=0.061NS$)

was non-significant with awareness of farmer regarding climate change because these two factors were not related to awareness of famers regarding climate change.

11. Occupation and awareness

Data presented in the Table 14 revealed that occupation had positive but non-significant ($r=0.0418$) relation with awareness regarding agricultural pollution, which indicates that occupation, was not an important variable for influencing the awareness regarding agricultural pollution.

The possible reason might be that majority of the respondents had farming and animal husbandry as their main occupation and remained engaged in their business, hence they were unable to spare time for thinking regarding agricultural pollution.

12. Land holding and awareness

A look in to the Table 14 showed that there was negative and non-significant ($r=-0.0067$) relationship between land holding and awareness, which indicates that land holding did not play any role on awareness regarding agricultural pollution. The possible reason might be that majority of the respondents were medium to big farmers but their education level was primary to secondary only.

This finding is in line with the findings of Deshmukh *et al.* (2024), who reported that annual income ($r=0.061NS$) was non-significant with awareness of farmer regarding climate change because these two factors were not related to awareness of famers regarding climate change.

Thus, it is clear from Table 14 that education, size of family, extension contact, mass media contact, information source and subscriber of agricultural magazine were significantly correlated with awareness of agricultural pollution. Hence the null hypothesis that there is no relationship between education, size of family, extension contact, mass media contact, information source and subscriber of agricultural magazine with awareness of agricultural pollution was rejected. The age, type of family, social participation, annual family income, occupation and land holding were found non-significant with awareness of agricultural pollution. Therefore, the null hypothesis that there is no relationship between age, type of family, social participation, income, occupation and land holding with awareness of agricultural pollution was accepted.

Table 2. Distribution of the respondents according to their age

(n=150)			
Sr. No.	Category	Frequency	Per cent
1	Young age group (up to 30 years)	12	08.00
2	Middle age group (31 to 50 years)	84	56.00
3	Old age group (above 50 years)	54	27.00
	Total	150	100.00

Table 3. Distribution of the respondents according to their educational level(n=150)

Sr. No.	Category	Frequency	Per cent
1	Illiterate	11	07.33
2	Primary education	40	26.67
3	Secondary education	40	26.67
4	Higher secondary education	24	16.00
5	Graduate and above	35	23.33
	Total	150	100.00

Table 4. Distribution of the respondents according to their type of family (n=150)

Sr. No.	Category	Frequency	Per cent
1	Nuclear family	64	43.00
2	Joint family	86	57.00
	Total	150	100.00

Table 5. Distribution of the respondents according to their size of family (n=150)

Sr. No.	Category	Frequency	Per cent
1	Small size of family (up to 4 members)	58	38.66
2	Big size of family (above 4 members)	92	61.33
	Total	150	100.00

Table 6. Distribution of the respondents according to their social participations (n=150)

Sr. No.	Category	Frequency	Per cent
1	No membership	07	04.00
2	Membership in one organization	84	56.00
3	Membership in more than one organization	41	28.00
4	Holding	18	12.00
5	Total	150	100.00

Table 7. Distribution of the respondents according to their extension contact (n=150)

Sr. No.	Category	Frequency	Per cent
1	Low extension contact (0-2 Score)	42	28.00
2	Medium extension contact (2-4 Score)	77	51.33
3	High extension contact (4-8)	31	20.66
	Total	150	100.00

Table 8. Distribution of the respondents according to their mass media contact

(n=150)

Sr. No.	Category	Frequency	Per cent
1	Low mass media contact	26	17.33
2	Medium mass media contact	103	68.66
3	High mass media contact	21	14.00
	Total	150	100

Table 9. Distribution of the respondents according to their sources of agricultural information

(n=150)

Sr. No.	Category	Frequency	Per cent
1	Low sources	72	48.00
2	Medium sources	53	35.33
3	High sources	25	16.66
	Total	150	100.00

Table 10. Distribution of the respondents according to subscriber of agricultural magazines

(n=150)

Sr. No.	Category	Frequency	Per cent
1	Subscriber	57	38.00
2	Not subscribe	93	62.00
	Total	150	100.00

Table 11. Distribution of the respondents according to their annual family income

(n=150)

Sr. No	Category	Frequency	Per cent
1	Low income (Up to Rs.50,000)	42	28.00
2	Medium income(Rs.50,001 to Rs.1,00,000)	70	46.66
3	High income (Above Rs. 1,00,000)	38	25.33
	Total	150	100.00

Table 12. Distribution of the respondents according to their occupation

(n=150)

Sr. No.	Category	Frequency	Per cent
1	Farming only	44	29.33
2	Farming with animal husbandry	76	50.66
3	Farming with other business	30	20.00
	Total	150	100.00

Table 13. Distribution of the respondents according to their land holding

(n=150)

Sr. No.	Category	Frequency	Per cent
1	Marginal farmers (Land up to 1.0 ha)	08	5.33
2	Small farmers (Land 1.01 to 2.0 ha)	21	14.00
3	Medium farmers (Land 2.01 to 4.0 ha)	41	27.33
4	Big farmers (Land Above 4.0 ha)	80	53.33
	Total	150	100.00

Table 14. Relationship of various socio-personal and economic characteristics with pollution awareness

(n=150)

Sr. No.	Independent variable	Correlation coefficient (r value)	
Personal			
1	Age	-0.0762	NS
2	Education	0.2842*	
Social			
3	Type of family	-0.0133	NS
4	Size of family	0.2620*	
5	Social participation	0.0132	NS
6	Extension contact	0.1324*	
7	Mass media contact	0.4379*	
8	Information sources	0.4122*	
9	Subscriber of agricultural magazines	0.3612*	
Economic			
10	Annual family income	0.0418	NS
11	Occupation	0.0418	NS
12	Land holding	-0.0067	NS

*Denotes significant at 0.05 % probability level (Table value=0.1342), NS = Non significant

From the above research findings it can be concluded that, majority of the respondents were from middle age, had primary to secondary level of education and had big and joint type of family. Majority of the respondents had membership in one organization, medium extension as well as mass media contact. More than half of the respondents were with primary and secondary level of education. This may be due to the availability of primary and secondary level of education at village level. Majority of the respondents had joint family. The probable reason might be prevailing joint type of family social system in this region. Majority of the respondents had low sources of agricultural information and were not subscribe of agricultural magazine. The most popular services oriented

village organization was co-operative societies. In order to avail its benefit such as credit, subsidy etc. they preferred to be members of service co-operative society. Majority of the respondents were big farmers, had medium to low income and farming with animal husbandry as their main occupation. Out of 12 independent variables only 6 variables like education, size of family, extension contact, mass media contact, information sources and subscriber of agricultural magazines were positively and significantly correlated with awareness regarding agricultural pollution. While other 6 variables like age, type of family, social participation, annual family income, occupation and land holding were non-significantly correlated.

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